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Electronic hybridization effects in dense intermetallics measured by electron spin resonance

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Abstract

Recent theoretical studies associate the unexpected well resolved electron spin resonance (ESR) signals below Kondo temperature in several undoped heavy-fermion (HF) compounds with hybridization effects between 4f and conduction electrons (CE) in the presence of ferromagnetic (FM) fluctuations. We analyze ESR experiments in different concentrated Yb-, Ce-, and Eu-based intermetallic systems. We believe that the exotic ESR absorption here is caused by a novel type of ESR excitations - hybridized electronic states, which can be created in some strongly correlated electronic systems due to hybridization between the 4f-orbitals and the wave functions of the CE of the outer electronic shells in conjunction with FM RKKY interaction.

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